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1.   (currently amended) A multi-point touch pad, comprising:

    a touch layer having a top surface and a bottom surface;

    a plurality of pressure sensing devices coupled to the bottom surface of the touch layer such that touch pressure applied to the top surface will impart pressure to the pressure sensing devices near the location of the touch pressure; and

    at least one processor coupled to the pressure sensing devices and constructed to calculate locations of at least two points on the top surface being simultaneously touched based on pressure sensing readings from the pressure sensing devices, wherein

- each pressure sensing device emits a signal representative of an amount of pressure at that device; and

- the locations of the at least two points are derived simultaneously using geometrically based calculations departing from differences in the amount of pressure detected at distinct ones of the pressure sensors.

2.   (Original) The touch pad of claim 1, wherein the processor is also constructed to calculate the pressure applied at each point being touched.

3.   (Previously Presented) The touch pad of claim 1, wherein the pressure sensing devices comprise sensors selected from the group consisting of force sensing resistors, piezoelectric sensors and capacitive touch sensors.

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4.   (Previously Presented)   The touch pad of claim 1, wherein each of the pressure sensing devices comprises a strain gauge.

5.   (Original)   The touch pad of claim 1, wherein the processor is a digital signal processor (DSP).

6.   (Previously Presented)   The touch pad of claim 1, wherein the pressure sensing devices are arranged in a matrix.

7.   (Previously Presented)   The touch pad of claim 4, wherein the pressure sensing devices are arranged in a matrix.

1   8.   (Previously Presented)   The touch pad of claim 1, wherein the processor is

2   constructed to perform the following algorithm:

3   a.   sampling the pressure sensing readings from the plurality of pressure sensing devices;

4   b.   calculating locations of one or more touches on the touch pad;

5   c.   calculating the amount of pressure exerted on each touch on the touch pad; and

6   d.   outputting calculation data.

1   9. (currently amended)   A multi-point touch pad, comprising:

2   a touch layer having a top surface and a bottom surface;

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3   a plurality of pressure sensing devices coupled to the bottom surface of the touch layer

4   such that touch pressure applied to the top surface will impart pressure to the pressure sensing

5   devices near the location of the touch pressure; and

6   at least one processor coupled to the pressure sensing devices and constructed to calculate

7   locations of at least two points on the top surface being simultaneously touched based on

8   pressure sensing readings from the pressure sensing devices,

9   wherein the processor is constructed to perform the following algorithm:

10   a.   sampling the pressure sensing readings from the plurality of pressure sensing

11   devices;

12   b.   calculating locations of one or more touches on the touch pad;

13   c.   calculating the amount of pressure exerted on each touch on the touch pad; and

14   d.   outputting calculation data; and

15   ~~The touch pad of claim 8,~~ wherein:

16   the algorithm contains known positions of the pressure sensing devices on the multi-point

17   touch pad;

18   the known positions of the pressure sensing devices are identified with the following

19   formula: (a_i, b_i), $i = 1, 2, ..., N$, where N is a number of pressure sensing devices, and the

20   measured pressures of the pressure sensing devices are p_i, $i = 1, 2, ..., N$;

21   the positions of the touch points on the multi-point touch pad are identified with the

22   following formula: (x_j, y_j), $j = 1, 2, ..., M$, where M is a known number of the touch points

23   that is less than N, and x_j and y_j are unknown and will be determined by the calculations of the

24   formula;

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25   the pressures of the touch points are identified with the formula: z_j, $j = 1, 2, ..., M$,

26   which are also to be calculated using the algorithm;

27   the algorithm transfers the sampling data from a DSP sampling module to a processor

28   calculation module where the algorithm calculates the positions and pressures of the touch points

29   using the following formula: $p\_i = w(|(x\_1, y\_1) - (a\_i, b\_i)|) z\_1 + w(|(x\_2, y\_2) - (a\_i,$

30    $b\_i)|)z\_2 + ... + w(|(x\_M, y\_M) - (a\_i, b\_i)|)z\_M$, $i = 1, ..., N$; where $w(|x\_j, y\_j) - (a\_i, b\_i)|)$

31   is a weighting factor that reflects the effect of pressure z_j on p_i;

32   the algorithm calculates that: $w(|(x\_j, y\_j) - (a\_i, b\_i)|)$ is a function of a distance

33   between the touch point (x_j, y_j) and the sensor location (a_i, b_i);

34   the algorithm calculates that $|(x_j, y_j) - (a_i, b_i)| = sqrt((x_j - a_i)* (x_j - a_i) \cdot (y_j - $

35    $b\_i)* (y\_j - b\_i))$ as being a distance between the touch point of j and the sensor i using the

36   notation "sqrt" as being representative of square root.

1   10.   (currently amended) A method of controlling an application with a touch pad,

2   comprising the steps of:

3   providing a touch pad having a touch surface with a bottom and a top and a plurality of

4   pressure sensors arranged under the touch surface and coupled to the bottom of the touch

5   surface;

6   sending a signal to a processor corresponding to a pressure at each sensor when the top of

7   the touch surface is simultaneously touched at two or more touch points; and

8   performing an algorithm to determine locations of the two or more touch points based on

9   comparing the pressure at each of the sensors,

10   <u>wherein</u>

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11   •   each pressure sensing device emits a signal representative of an amount of pressure at

12   that device; and

13   •   the locations of the at least two points are derived simultaneously using geometrically

14   based calculations departing from differences in the amount of pressure detected at

15   distinct ones of the pressure sensors.

11.   (Original) The method of claim 10, further comprising the step of:

calculating the pressure applied at each point being touched.

1   12.   (Previously Presented) The method of claim 10, wherein the pressure sensors are

2   selected from the group consisting of force sensing resistors, piezoelectric sensors and capacitive

3   touch sensors.

13.   (Previously Presented) The method of claim 10, wherein the pressure sensors comprise

strain gauges.

14.   (Previously Presented) The method of claim 10, wherein the processor is a digital signal

processor (DSP).

15.   (Previously Presented) The method of claim 10, wherein the pressure sensors are

arranged in a matrix configuration.

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16.   (Previously Presented) A method of claim 13, wherein the pressure sensors are arranged in a matrix.

1   17.   (Previously Presented) The method of claim 10 wherein the algorithm comprises the

2   steps of:

3   a.   sampling the signals from the plurality of pressure sensors;

4   b.   calculating locations of one or more touches on the touch pad;

5   c.   calculating the amount of pressure exerted on each touch on the touch pad; and

6   d.   outputting calculation data from the algorithm to control the application.

1   18.   (currently amended) A method of controlling an application with a touch pad,

2   comprising the steps of:

3   providing a touch pad having a touch surface with a bottom and a top and a plurality of

4   pressure sensors arranged under the touch surface and coupled to the bottom of the touch

5   surface;

6   sending a signal to a processor corresponding to the a pressure at each sensor when the

7   top of the touch surface is simultaneously touched at two or more touch points; and

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8   performing an algorithm to determine locations of the two or more touch points based on

9   comparing the pressure at each of the sensors

10   ~~The method of claim~~ 10 ~~further~~ comprising the steps of:

11   identifying positions of the pressure sensors with the formula: (a_i, b_i), $i = 1, 2, ..., N$,

12   where N is the number of pressure sensors, and the measured pressures of the pressure sensors

13   are p_i, $i = 1, 2, ..., N$;

14   programming the positions of the touch points on the multi-point touch pad as (x_j, y_j), j

15    $= 1, 2, ..., M$, where M is a known number of the touch points that is less than N, and x_j and y_j

16   are unknown and will be determined by the calculations of the algorithm;

17   quantifying the pressures of the touch points with the formula z_j, $j = 1, 2, ..., M$, using

18   the algorithm;

19   transferring sampling data from a sampling module to a calculation module;

20   calculating the positions and pressures of the touch points using the following formula:

21    $p\_i = w(|(x\_1, y\_1) - (a\_i, b\_i)|) z\_1 + w(|(x\_2, y\_2) - (a\_i, b\_i)|)z\_2 + ... + w(|(x\_M, y\_M)$

22    $(a\_i, b\_i)|)z\_M$, $i = 1, ..., N$; where $w(|(x\_j, y\_j) - (a\_i, b\_i)|)$ is a weighting factor that reflects

23   the effect of pressure z_j on p_i using the algorithm;

24   calculating that: $w(|(x\_j, y\_j) - (a\_i, b\_i)|)$ is a function of a distance between the touch

25   point (x_j, y_j) and the sensor location (a_i, b_i) using the algorithm;

26   calculating that $|(x\_j, y\_j) - (a\_i, b\_i)| = sqrt((x\_j - a\_i)* (x\_j - a\_i) - (y\_j - b\_i)* (y\_j -$

27    $b\_i))$ as being a distance between the touch point of j and the sensor i using the notation "sqrt" as

28   representing square root using the algorithm.

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1   19.   (currently amended) A method, comprising:

2   receiving a plurality of signals from a plurality of pressure sensors in a touch pad, the

3   signals representing a plurality of pressures detected by the pressure sensors when the touch pad

4   is simultaneously touched at two or more touch points;

5   identifying locations of the two or more touch points using the plurality of signals; and

6   identifying pressures applied to the two or more touch points using the plurality of

7   signals,

8   wherein

9   • each pressure sensor emits a signal representative of an amount of pressure at that

10   sensor; and

11   • the locations of the at least two points are derived simultaneously using geometrically

12   based calculations departing from differences in the amount of pressure detected at

13   distinct ones of the pressure sensors.

1   20.   (Previously Presented) The method of Claim 19, wherein:

2   the plurality of pressure sensors comprise a plurality of strain gauges;

3   each of the strain gauges comprises a pair of sensor wires; and

4   the pressure associated with at least one of the touch points causes a change in a

5   resistance of at least one of the strain gauges, the change in resistance being transmitted through

6   the pair of sensor wires of the at least one strain gauge.

21. (cancelled)

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22. (previously presented) A device comprising the pad of claim 1, further comprising a

processor for interpreting the simultaneous touches as musical.

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